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IPA on a University's Brand Equity and Competitors: Based on a Survey among University Freshmen

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Abstract
The purpose of this study is to understand freshmen's perceptions and viewpoints on the brand equity of their university. IPA (importance-performance analysis) was used to explore the relation between perceived importance and performance of each attribute. By including competitors' coping strategies, the relative position of each attribute of the target university's brand equity was discussed. The data were collected from a questionnaire survey conducted among 1358 freshmen of a university at southern Taiwan, and 849 responses were returned and valid. A total of 13 attributes in the questionnaire were developed by the researchers, and these attributes covers three dimensions: brand awareness, brand association and brand loyalty. For each attribute, the level of perceived performance was lower than that of perceived importance, suggesting that brand equity should be improved. IPA results show that most of the attributes fell into "Quadrant B: Keep Up the Good Work", and "Quadrant C: Low Priority." When the two major competitors were included for comparison, the university should check the location of each attribute in the eight cells to identify its relative position and develop strategies accordingly.
Keywords: University, Brand, Brand equity, Competitor, Importance-performance analysis

1. Introduction

For the past two decades, the number of higher education institutions in Taiwan has been growing rapidly. By the year 2012, there were as many as 162 universities and colleges, while the number of students had increased to 1,360,000, which is nearly 6% of the total population, surpassing 2.1% in Japan and 3.8% in the U.S.

In the meantime, the declining birth rate in Taiwan has worsened the operation conditions of some private universities and colleges. While there are twelve public and private universities in Taiwan that are going to be terminated or merged (udn, 2013), some other universities remain to be the favorite of many parents and students, even if these schools are far away from home, with high tuition and miscellaneous fees, or accompanied by an expensive cost of living. Furthermore, there are obvious differences among universities in terms of the number of application via recommendation and screening, the enrollment rate, and the expulsion and suspension rate. In a sense, a brand effect has emerged among universities (Yeh, 2006).

Brand is regarded as a powerful tool for promoting organization image and competitiveness, and special attention has been directed onto it by the education community in recent years (Balmer, Liao & Wang, 2010). Although educational brand related researches in Taiwan are flourishing, most of them cut into the issue from the viewpoint of service providers. Studies on the aspects of customers are relatively scarce (Huang, 2012), not to mention the lack of empirical researches focusing on making comparison with competitors. Therefore, it is important to explore the university brand effect further and to include the primary competitors for comparison.

Importance-Performance Analysis (IPA) was presented by Martilla and James as early as in 1977. A two-dimensional matrix is used for improving the product and service and for drawing decisions accordingly. IPA was initially developed in the field of marketing. Combining perceived importance and performance, IPA has been broadly and successfully used for a variety of purposes, including education assessment, marketing strategy and travel guidance, assisting managers to determine the priority of improvement strategies and the direction of resource deployment (Chu & Choi, 2000; Magal & Levenbury, 2005).

Although the two-dimensional matrix of IPA is helpful, Dolinsky and Quazi (1994) found that IPA is limited to the subject studied, and moreover, it ignores the relationship with external circumstances or the position of competitors. If competitors are included and compared, the relative position of each attribute can be clearer, and a manager can therefore adjust the marketing strategies more accurately. By cutting into the point from different aspects, extended IPA provides alternative thinking, skipping out of conventional analysis mode, and broadening IPA application.

The data source of this study is a survey among freshmen of a university. The survey is interested in how freshmen perceive the brand equity of their university and measures the gap between their expectation and the actual perception using IPA. IPA was graphically interpreted using a grid divided into four quadrants, and the attributes are assessed based on the quadrant they fall into. When considering the two primary competitors' performance on the same attributes, eight different combinations could be identified, and hence, eight different outcome cells were formed. It was easier to identify the competitive advantages and disadvantages, the head-to

head competition, the neglected opportunity, the false advantage, and the false competition.
The goals of the study are to:

- understand the current status of the sample university's brand equity and analyze the attributes identified at each of the four quadrants by IPA;
- include two primary competitors' performance to analyze the sample university's brand equity in each cell and provide recommendations.

2. IPA Theory and Application

2.1 IPA and the Procedure

The theoretical base of IPA is that when studying an attribute of a service (or product), the study results may be biased if only importance or performance is considered rather than both. To be more comprehensive, both elements should be considered at the same time.
Sampson and Showalter (1999) pointed out that IPA was a technique that rates the attributes of a specific service (or a product) using the level of importance, which is assessed by consumers about the importance of attributes and the level of performance, which is about the performance of an organization perceived by consumers. The analysis results can help service/product providers understand the need of customers and how customers evaluate the performance more thoroughly.
Ratings of the importance and performance of a given attribute assessed by consumers were collected. The y-axis indicates the importance of an attribute assessed by consumers, while the x-axis indicates the organization's performance of the attribute perceived by consumers. The ratings of attributes are plotted on a two-dimensional grid divided into four quadrants (Figure 1) and the result can be used to evaluate perceived importance and perceived performance of an attribute and to develop an effective strategy. For attributes in "Quadrant A: Concentrate Here", these attributes are perceived by customers as very important, but the performance of these attributes is fairly low. As a result, the service provider must improve this area. For attributes in "Quadrant B: Keep up the good work", these attributes are perceived by customers as very important, and at the same time, the perceived performance suggests that the organization is doing a good job in relevant activities. Therefore, the attributes should be kept the same. For attributes in "Quadrant C: Low priority", these attributes have low importance and low performance; in this case, limited resources should be devoted to this low priority cell. For attributes in "Quadrant D: Possible overkill", these attributes are not important but perform relatively well. This result suggests that the service provider may have put too much effort on the attributes here.

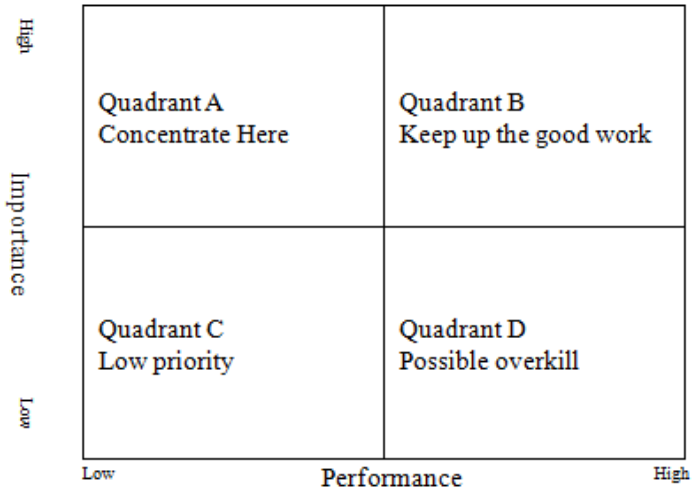

Figure 1. Importance-Performance Analysis grid
Source: J.A., Martilla, & J. C., James, 1977,
Importance-performance analysis, *Journal of Marketing, 41*, 77.

The major procedures of basic IPA (O'Sullivan, 1991) are presented below.

- List the attributes of a specific service/product, and develop a questionnaire accordingly.
- Have the users rate the importance and performance of each attribute. The term importance refers to how important an attribute is to the users, while performance refers to how well the service/product provider performs.
- Create a two-dimensional grid. The y-axis denotes user perceived importance of a selected attribute, while the x-axis denotes user perceived performance of the same attribute. The ratings of a given attribute are

plotted on the two-dimensional grid.

- Divide the grid into four quadrants by total mean ratings of perceived importance and perceived performance.

On selecting the dividing point, some researchers stated that it is the median, rather than the mean that should be used (Martilla & James, 1977; O'Sullivan, 1991). However, Hollenhorst, Olson and Fortney (1992) reported that it is easier to judge and interpret using the mean than the median of perceived importance and performance as the origin of the xy-coordinates. In this study, the dividing point of the coordinate is the mean rating of each attribute minus the total average.

2.2 Extended IPA

Although basic IPA is a useful technique, Dolinsky and Quazi (1994) found that including customers' perceptions of competitors' performance on the same attributes, i.e., extending the basic IPA, can make the analysis more comprehensive. As shown in Table 5, the perceived importance of a given attribute can be divided into high and low. Similarly, the perceived organization performance and competitor's performance of the same attribute can be divided into poor and good. When the three components are considered concurrently, eight different combinations can be identified, forming eight different outcome cells.

The extended IPA shows the position of a university in relation to its primary competitors, and thus this method can provide more accurate information for managers to effectively adjust their marketing strategies.

3. Research Design and Method

3.1 Method

In this study, a questionnaire survey was conducted to explore freshmen's perceived importance and performance of the brand equity of their university. Extended IPA was employed to analyze the perceived performance of two primary competitors nearby.

3.2 Subject and Sample

The subject studied was a private university of technology (hereafter University A) in southern Taiwan. University A was founded on medicine and nursing programs 45 years ago and was upgraded from a junior college to a university of technology in recent years. University A is located between urban and rural areas, and in the same neighborhood, there are another five general universities and six more technology universities, making the competition pretty intense. Presently, there are close to 9,000 students enrolled in the university, and each year, there are about 500 students transferred to other universities nearby. It seems that University A's brand equity is not as good as the neighboring universities'.

The study population was freshmen enrolled in 2013. Of the 1358 questionnaires distributed among freshmen at the first class meeting, 1197 of them were returned. A lie scale was designed and included in the questionnaire to detect invalid responses like answers showing regularities or with a missing value greater than 20%. After eliminating the invalid ones, there were 849 questionnaires containing complete information, yielding an effective rate of 62.5%. Among the valid questionnaires, the two most favorable universities if University A is not available were University B (chosen by 342 respondents) and University C (chosen by 135 respondents). Data from these 477 respondents were used in extended IPA.

Over 70% and 20% of freshmen selected a competitor university located within 100 km and 200 km respectively from University A. Less than 10% of freshmen selected a competitor university located more than 201 km from University A. It is obvious that the primary competitors of University A are located in the same neighborhood. Moreover, the distribution of freshman sources indicates that over 70% of the freshmen come from areas within 100 km.

3.3 Research Instrument

The major instrument was "University's Brand Equity Questionnaire" developed by the researchers. The draft of original attributes was derived from theories and the literature. The attributes were carefully revised based on Aaker's brand equity (1991), and the questionnaire contents of Ashby (2008), Edmiston-Strasser (2007), Higgins (2006) and Lin (2005) before creating an 18-attribute draft.

After setting up the draft questionnaire, two university professors were invited to examine the contents. After consolidating two attributes with other attributes and rewording several items, a 15-attribute questionnaire was formed. A negatively worded item, A11, was designed for lie detection. See Table 2.

The freshmen were asked to rate each of the 15 attributes in terms of the importance and the actual performance of University A and of the primary competitors using a 5-point Likert scale, ranging from 1, least important, to 5, extremely unimportant, for the importance part, and from 1, very dissatisfied, to 5, very satisfied, for the performance part.

The data on the perceived importance of the 15 attributes were used in the item analysis and factor analysis. The details are presented below.

3.3.1 Item Analysis

Adopting the viewpoint of Chiu (2002), the researchers examined each item by the missing value analysis (an

effective rate greater than 95%), mean (a value greater than 3.0), correlation test (a multiple correlation greater than .35), and the relationship analysis (a value greater than .50). The overall Cronbach's α was .91. Except A02 and A12, all attributes satisfied the preset criteria. The mean score of A02 was 2.98, less than 3.0. By eliminating A12, the reliability coefficient can be effectively increased. After considering relevant studies, A02 and A12 were eliminated, and the exploratory factor analysis was employed on the remaining 13 attributes.

3.3.2 Factor analysis

The Kaiser-Meyer-Olkin (KMO) value, indicating the overall sampling adequacy, was .929, and Bartlett Test of Sphericity value was .01. These results suggest that factor analysis is an appropriate tool here. Considering that the correlation among key attributes was .01, Oblimin oblique rotation with Kaiser normalization was used. Principal axis factoring was used to extract factors with an eigenvalue greater than 1.0, and by including the scree test, three factors were extracted, and the factor loading of each attribute was greater than .35. The association between attributes and the factors conformed to the preset criteria in the literature, and therefore, all 13 attributes were retained. Based on the underlying potential features, the three factors were named as brand loyalty (five attributes), brand association (four attributes) and brand awareness (four attributes), respectively.

The thirteen attributes were submitted to the factor analysis again. The accumulated percentage of explained variance of the three factors for the attributes was 55.06%. The internal consistency of each factor had an overall Cronbach's α of .92, and the coefficients of the three factors were .86, .84 and .82, respectively. As stated above, the reliability and construct validity of the questionnaire were considered acceptable, and therefore the questionnaire is a reliable research tool. Table 2 shows the results of item analysis and exploratory factor analysis.

Table 2. Exploratory Factor Analysis of Attributes (n=849)

Attribute/no.	Factor 1	Factor 2	Factor 3
A01. University reputation			.427
A02. Advertisement from media			
A03. Awards from community contests			.588
A04. Recommendations from classmates or friends			.427
A05. Recommendations from relatives or teachers			.358
A06. University positive appraisal	.543		
A07. Wise choice evaluation	.711		
A08. Willingness to retain until graduation	.752		
A09. Recommending the university to friends/ acquaintances	.762		
A10. Alumni performance	.502		
A12. Some good departments			
A13. University features		.444	
A14. University's competitiveness		.612	
A15. A plus to employment		.920	
A16. A plus to higher education		.863	
Eigenvalue	6.176	1.431	1.099
Percentage of total variance explained	45.69	51.27	55.06

Note: To simplify, only factor loadings from pattern matrix greater than .35 are shown. Eigenvalues and percentage of total variance explained are the results of the 13 attributes.

3.4 Data Processing and Analysis

SPSS10.0 for Window was used to measure descriptive statistics, internal consistency, exploratory factor analysis, and paired-samples t test. Microsoft Excel 2003 was used to process IPA and plot the graphs.

4. Results

4.1 Current Status of University A's Brand Equity

4.1.1 Importance

Table 3 shows that the mean of importance ratings of university brand equity is 3.94. The mean of importance ratings of the three dimensions ranged from very important to important (M=4.03～3.73), and the mean of ratings of "brand royalty" was the highest, followed by "brand association" and "brand awareness."

As for each attribute alone, the mean of ratings ranged from very important to important (M=4.29～3.58). The five attributes with the highest mean rating were A06, A08, A15, A16 and A07, and their average was greater than 4.0 (or equivalent to 80%). They were regarded as the more important attributes, and a majority of them belong to "brand loyalty" and "brand association." The attributes from "brand awareness" did not have a particularly high mean of ratings. Two attributes, A03 and A04, from "brand awareness", had a mean of ratings lower than 3.75 (or equivalent to 75%). This finding shows a strong association between attributes and the

respective dimension.

4.1.2 Performance

Table 3 shows that the mean of ratings of performance of University A's brand equity was 3.43. The mean of ratings of performance of the three dimensions ranged from satisfied to generally satisfied (M=3.52～3.24). Of the three dimensions, "brand loyalty" had the highest mean of ratings, followed by "brand association. The perceived performance of "brand awareness" was slightly lower.

As for each attribute alone, the mean of ratings ranged from generally satisfied to satisfied (M=3.16～3.76). A08, A13, A15 and A10 had the highest mean of ratings, and their average was higher than 3.50 (or equivalent to 70%). These attributes belong to dimensions "brand association" or "brand loyalty." The two attributes with a lower mean of ratings were A03 and A04, and both of them are from the "brand awareness" dimension. This finding shows a strong association between attributes and the respective dimension.

4.1.3 Difference analysis of importance and performance

To assess the significance of differences between freshmen's perceived importance and the university's actual performance of the 13 attributes, a paired sample *t*-test was conducted. The results revealed that both importance and performance reached .01, indicating statistical significance (*t* values ranged from 9.52 to 25.20, as shown in Table 3). A further step taken to test difference direction shows that the level of performance was slightly lower than the level of importance in each attribute. Paired sample *t*-test results of the three dimensions suggest that the difference between the dimensions is also significant, and the difference in importance was greater than the difference in performance. The evaluation of brand equity overall also shows similar results.

In regard to University A's brand equity, the results shown above suggest that the level of importance perceived by the freshmen was greater than the level of performance perceived by them, either in general, on the dimensional level, or on the attribute level. This means that University A has to work on improving its brand equity.

Table3. Importance and Performance for Each Attribute (*n*=849)

Attribute	Important *M*	Important *sd*	A's Performance *M*	A's Performance *sd*	Quadrant	*t*-test
Total average	3.94	0.59	3.43	0.60		24.09**
Brand awareness	3.73	0.73	3.24	0.67	C	19.37**
Brand association	4.02	0.70	3.51	0.71	B	20.67**
Brand loyalty	4.03	0.65	3.52	0.66	B	22.70**
A01	3.87	0.88	3.43	0.76	C	14.98**
A03	3.58	0.93	3.16	0.77	C	13.56**
A04	3.70	0.95	3.16	0.92	C	15.80**
A05	3.78	0.95	3.21	0.94	C	16.26**
A06	4.29	0.81	3.54	0.80	B	25.20**
A07	4.06	0.86	3.40	0.77	A	21.63**
A08	4.20	0.83	3.76	0.87	B	15.42**
A09	3.71	0.94	3.40	0.88	C	10.53**
A10	3.92	0.91	3.52	0.80	D	13.34**
A13	3.87	0.92	3.59	0.89	D	9.52**
A14	3.95	0.89	3.39	0.84	A	17.20**
A15	4.19	0.86	3.58	0.87	B	19.89**
A16	4.07	0.90	3.47	0.85	B	19.52**

Note: ** denotes a p value greater than .01, suggesting statistical significance.

4.1.4 Basic IPA

The IPA grid shows that "brand awareness" was in the Low Priority quadrant, while "brand association" and "brand loyalty" were in the Keep Up the Good Work quadrant.

Most of the 13 attributes were either in the Low Priority quadrant (n=5) or the Keep Up the Good Work quadrant (n=4). There were also two attributes, "wise choice evaluation" and "university's competiveness" in the Concentrate Here quadrant. The results suggest that "The selection of University A is a wise choice" and "University A is full of competitiveness" should be prioritized for improvement at the present time. The level of perceived performance on "alumni performance" and "creating university features" was slightly higher than the average, and they fell into the Possible Overkill quadrant.

- A10 and A13 fell into Quadrant A (Concentrate Here: high importance, but low performance).
- A06, A08, A15 and A16 fell into Quadrant B (Keep Up the Good Work: high importance and high performance).
- A01, A03, A04, A05 and A09 fell into Quadrant C (Low Priority: low importance and low performance).
- A14 and A07 fell into Quadrant D (Possible overkill: low importance, but high performance).

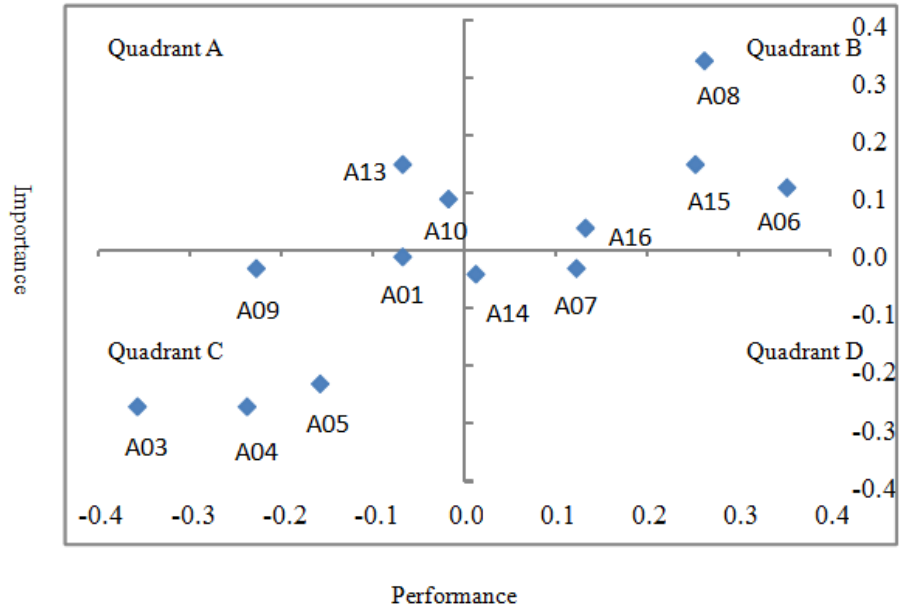

Figure 2. Basic IPA Grid

4.2 Extended IPA on University A and Its Primary Competitors

4.2.1 Current Status of Perceived Importance and Performance of the Three Universities

Because 477 respondents chose University B or C to attend if University A is not available, these two universities were identified as the primary competitors of University A. In comparison with the 849-respondent samples, there was no big difference on the perceived importance (total average 3.94 vs. 3.93) or on the perceived performance of University A's brand equity (total average 3.43 vs. 3.44) between the two groups. There was almost no difference between the two groups in terms of the quadrant each attribute fell into, except that A13 was changed from quadrant A to quadrant B.

The freshmen rated University C's brand equity performance the highest, followed by University B, and then University A. Nevertheless, the average of each university was above the average of the three universities. The only attribute of University A that has the highest rating is A13, "creating university features."

Table 4. Perceived Importance and Performance of the Three Universities (n=477)

Attribute	Importance	University A's performance	Quadrant	University B's performance	University C's performance
A01	3.88	3.42	C	4.11	4.14
A03	3.63	3.20	C	3.54	3.77
A04	3.69	3.20	C	3.89	3.91
A05	3.70	3.22	C	3.91	3.92
A06	4.25	3.57	B	3.97	3.97
A07	4.00	3.39	D	3.82	3.84
A08	4.14	3.74	B	3.80	3.85
A09	3.70	3.41	C	3.72	3.84
A10	3.90	3.48	A	3.69	3.78
A13	3.95	3.60	B	3.54	3.59
A14	3.97	3.42	D	3.87	4.04
A15	4.15	3.60	B	3.90	4.04
A16	4.01	3.49	B	3.85	3.99
Mean	3.93	3.44		3.82	3.90

Note: The number framed is the highest rating of the attribute.

4.2.2 Extended IPA

After including the primary competitors, A07 and A14 were identified as competitive disadvantages. This means that they should be improved urgently because the freshmen do not consider choosing University A is a wise choice and they believe that University A's competitiveness is poor.

A06, A08, A13, A15 and A16 were identified as head-to-head competition among the universities, A01, A03, A04, A05 and A09 false alarm, and A10 false competition. Those low importance attributes do not worth the effort.

Compared with the competitors, University A must adopt an aggressive strategy on positive appraisal, willingness to retain until graduation, creating university features, a plus to employment, and a plus to higher education. If those attributes are improved, the freshmen will be more agreed on "selecting University A is a wise choice" and "university competitiveness" and the competitive disadvantage at the present time can be reversed.

Table 5. Extended IPA Diagnostic Grid (*n*=477)

Perceived importance		University A's performance	University B's performance	University C's performance	Results
High	A06.A07.A08.A13.A14.A15.A16	Poor A07.A14	Poor	Poor	Neglected opportunity
			Good A07.A14	Good A07.A14	Competitive disadvantage
		Good A06.A08.A13. A15.A16	Poor	Poor	Competitive Advantage
			Good A06.A08.A13. A15.A16	Good A06.A08.A13. A15.A16	Head-to-Head competition
Low	A01.A03.A04.A05.A09.A10	Poor A01.A03.A04. A05.A09.	Poor	Poor	Null opportunity
			Good A01.A03.A04. A05.A09.	Good A01.A03.A04. A05.A09.	False alarm
		Good A10	Poor	Poor	False advantage
			Good A10	Good A10	False competition

5. Discussion and Suggestions

5.1 Discussion

In general, University A's freshmen considered "brand loyalty" the most important element of brand equity, followed by "brand association" and brand awareness." The order of the dimensions in the perceived performance was similar. That is, brand loyalty was regarded as the most important dimension, and its performance was also better. The poor performance on awareness is probably because technology universities seldom pay attention on promotion and its image. The low importance and performance levels of some attributes are probably because that brand equity was a brand new concept for freshmen, and they did not fully understand the meaning when filling out the questionnaire. As a result, some sort of focus bias emerged. Although the questionnaire has good reliability and validity, how to present the questionnaire items for freshmen to understand requires more efforts.

The respondents generally showed a positive attitude toward the 13 attributes. For the 13 attributes, the mean performance rating was lower than the mean importance rating, and this pattern can also be observed on the three dimensions. In other words, there is a gap between perceived importance and perceived performance, and University A should work on improving its brand equity.

In basic IPA, more attributes fell into quadrant B and C. Brand awareness mainly fell into the Low Priority quadrant, while A07 and A14 fell into the Concentrate Here quadrant in basic IPA. Nevertheless, when the two competitors were included in extended IPA, these two attributes fell into the Competitive Disadvantage. It is hard to improve the two attributes immediately. University A should adopt some marketing strategies, such as carrying out product and promotional activities, to make the perspective students recognize University A's competitiveness and agree that selecting University A is a wise choice.

Except A06, A08, A13, A15 and A16, the suggestions for the majority of the attributes based on results of extended IPA and basic IPA are similar. According to Basic IPA, a conservative, continuous keep-up-the-good-work strategy should be adopted for each of these attributes. However, when the two primary competitors are also considered in extended IPA, University A must use an aggressive, head-to-head competitive strategy to reverse the disadvantages in the short term. It is especially true for A07 and A14, which are the competitive disadvantages.

5.2 Suggestions

5.2.1 The current status of university's brand equity should be evaluated using IPA to identify the priority areas for marketing effort.

Basic IPA is an effective tool for understanding university stakeholders' perceived importance and performance on the school's brand equity. By understanding the current status, the university can formulate a marketing

strategy for its educational brand, and this is why IPA is of great value.

The university can evaluate not only itself but also the competitors by using extended IPA as a diagnostic tool. Extended IPA can be used to formulate effective short-term, rather than long-term, solutions. Therefore, the university should carefully evaluate attribute enhancement strategies that require long-term resource commitments.

5.2.2 Develop a more effective marketing strategy based on extended IPA.

Since University A's primary competitors come from the neighborhood and its student source is locally distributed, the neighboring competitors of University A can cause direct stress on University A. When a marketing strategy is implemented, University A must notice the position of the competitors in order to strengthen the correctness of its positioning strategy.

The widely used IPA has also been applied in the field of education. Although the position of competitors was ignored before, it is now recommended that the competitors should be considered in order to analyze the issue three dimensionally for developing a more effective and accurate marketing strategy.

5.2.3 Extended IPA should be used periodically to examine the competitors' changes and students' reaction

External environment changes quickly, and so are the behavior and thinking of customers. Although extended IPA is useful for understanding the competitors' positions, it is not the only tool. Business firms often re-evaluate the performance on brand management annually, and universities should do the same. By conducting a survey repeatedly over a period of time, the university can examine the competitors' changes and students' reactions using IPA. In fact, IPA should be adopted routinely to enhance its competitiveness.

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